

## Using WiSP

WiSP is not a program itself; it is a set of independent programs that control your digital satellite communications. It was designed to make the operation of satellites using the PACSAT Protocol easier. Written by Chris Jackson, ZL2TPO/G7UPN and donated to AMSAT organizations around the world to help raise funds. These programs do share information between one another, but are actually standalone programs that can be run independently. Once you have WiSP installed and setup you are ready to control your digital satellite activities. Steven Bible, N7HPR has prepared a very useful step by step guide to installing and setting it up WiSP. This is found in the Appendix. After setting up WiSP, place a shortcut on your desktop to GSC and MSPE. **Be sure and read the KnownProblems file.**

The seven programs in the WiSP suite are:

**GSC** – the **Ground Station Control** provides the setup, scheduling, housekeeping and automation;

**MSPE** – the **Microsat Protocol Engine** provides the uplink and downlink Operation;

**View Directory** – provides the directory viewing function as well as realtime message viewing and reply;

**MsgMaker** – the Message Maker function performs the message creation and reply functionality;

**ProcMail** – **Process Mail**, processes the mail as it is downloaded or post pass, and places it in the correct directory;

**MsgView** – **Message Viewer** displays the ASCII messages received as they are received. The messages can view images and look into PKZIP files using the Windows file associations.

**Update Keps** – when a Keplerian elements file is downloaded from the satellite and this function turned on, the Keplerian elements in the WiSP tracking function of GCS will automatically be updated.

**Telemetry** decoding functional available in the 16-bit version of WiSP not operational with the current digital satellites.

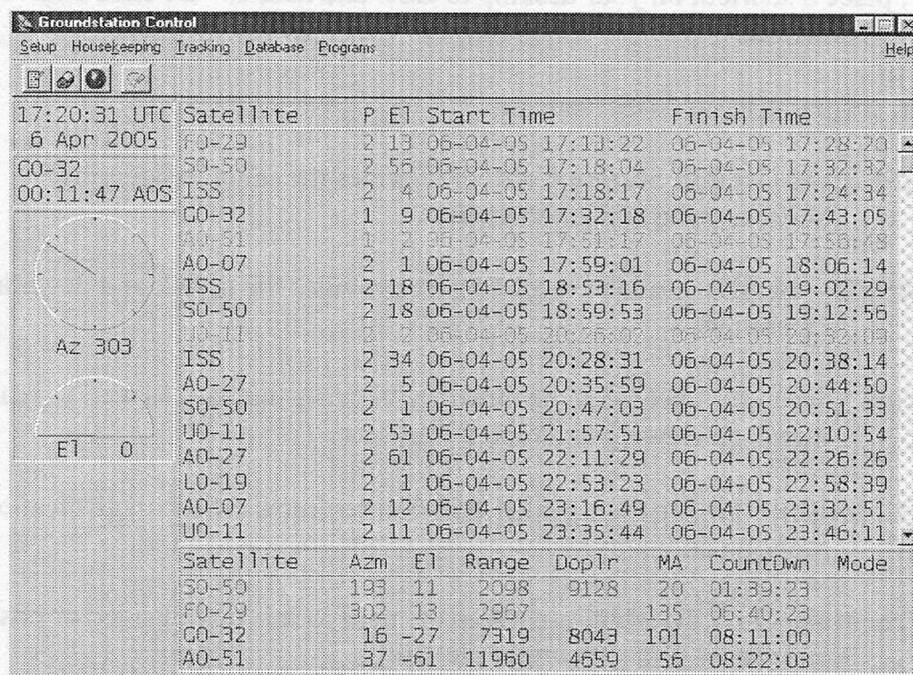
WiSP can also be used to interact with satellites not using the PACSAT Protocol Suite. If you want to run a CW decoding program or a terminal program that copies plain AX.25 text you can easily set WiSP up to do this in Sat Setup – Scheduling - Program. WiSP is a very versatile program that can control all your satellite operations.



**GSC** To begin WiSP operations click on the control program GSC (Ground Station Control) icon.

The GSC screen displays the upcoming satellite schedule for your location, the priority you selected for each satellite (P), what the maximum elevation of the pass will be (EI), how long the pass lasts and the current azimuth and elevation for the selected satellite. The bottom window of the GSC screen is the Tracking window

**Figure 1.** Sample WiSP GSC screen



### Major areas of the GSC program display

There are four basic areas to the GSC display screen.

1. The Scheduling box in the center
2. The Tracking box on the bottom
3. The Toolbars are at the top of the window
4. The Time of day, selected satellite and rotor position on the left

### Scheduling Box

The chronological schedule of satellite passes will only show the satellites that you have configured, not all that are in the Keplerian elements used. If a satellite you are interested in is not in the list, you must add it through SETUP, Satellite Setup. If the time or location is incorrect go to the Station Setup and correct it. The satellites active at the current time are shown in red text. The satellites in gray text, like AO-51 (5<sup>th</sup> satellite) shows that there is a pass, but this pass does not meet my minimum elevation setting in Satellite Setup and won't be run automatically.



If you **RIGHT Click on a satellite line in the scheduling box** you are able to edit most of the operations WiSP will perform on that satellite. Here you can

1. Schedule a future tracking event
2. End this pass now or Run this pass now
3. Listen only

**Figure 2.** Right Click on a line in the GSC Scheduling box.

These are very useful features if you are switching satellites that are visible at the same time or if you want to RUN – track and execute the assigned program linked to a satellite. If the satellite is a PACSAT Protocol satellite you probably are running MSPE when the satellite is in view. If you want to switch and decode telemetry you can ‘End this pass’.

| Satellite | P | E1 | Start Time        | Finish Time       |
|-----------|---|----|-------------------|-------------------|
| UO-11     | 2 | 23 | 06-04-05 21:57:51 | 06-04-05 22:10:54 |
| AQ-27     | 2 | 23 | 06-04-05 22:11:29 | 06-04-05 22:26:26 |
| LO-19     | 2 | 23 | 06-04-05 22:53:23 | 06-04-05 22:58:39 |
| AQ-07     | 2 | 12 | 06-04-05 23:16:49 | 06-04-05 23:32:51 |
| UO-11     | 2 | 11 | 06-04-05 23:35:44 | 06-04-05 23:46:11 |
| AQ-16     | 1 | 28 | 06-04-05 23:37:15 | 06-04-05 23:51:04 |
| AQ-27     | 2 | 13 | 06-04-05 23:52:50 | 07-04-05 00:05:01 |
| RS-10     | 2 | 0  | 07-04-05 00:00:55 | 07-04-05 00:00:55 |
| SQ-50     | 2 | 2  | 07-04-05 00:14:53 | 07-04-05 00:21:37 |
| LO-19     | 2 | 39 | 07-04-05 00:26:54 | 07-04-05 00:41:15 |
| AQ-07     | 2 | 66 | 07-04-05 01:05:06 | 07-04-05 01:27:01 |
| AQ-16     | 1 | 28 | 07-04-05 01:16:28 | 07-04-05 01:30:31 |

| Satellite | Azm | E1  | Range | Dopler | MA  | CountDown | Mode |
|-----------|-----|-----|-------|--------|-----|-----------|------|
| FO-29     | 93  | -31 | 7952  |        | 47  | 01:57:45  |      |
| SQ-50     | 258 | -49 | 10491 | 5216   | 247 | 02:11:45  |      |
| GO-32     | 95  | -38 | 9046  | 5577   | 48  | 03:28:22  |      |
| AQ-51     | 134 | -56 | 11536 | 3492   | 12  | 03:39:25  |      |

**Annoyance:** If you are running MSPE and shut it down, it also kills the pass schedule and tracking function. If you shut down any default satellite program started from MSPE you need to restart the rotor tracking for that satellite. I would close MSPE to switch over to TImECHO and wonder why the satellite would get so weak shortly there after; the rotor was no longer tracking the satellite. **Solution:** You need to ‘Enable Rotor’ under Tracking or Right Click on that satellite in the Tracking box and ‘Enable Rotor’.

**Tip:** If you have an RS-232 switch box and don’t have the correct modem connected when MSPE starts (you get an error). Close MSPE, connect the correct serial device, Right Click on the sat, and then select ‘Run this pass’.

### Tracking Box

This area shows you the Tracking information for any satellites you added to the tracking list in the Toolbar Tracking selection. There is useful information about the range, current downlink Doppler shift, where the satellite is in its’ orbit and how long until the next pass.

Note that FO-29 has no Doppler information. This problem took me a while to figure out. Of course once you figure it out it turns out to be quite logical, this is the Tracking box after all. GSC doesn’t use the receive frequency entered during Satellite Setup for Doppler. You have to activate the Graphic Display - you can Right Click on the satellite name in the Tracking Box or click on the Map icon in the Tool Bar. Then Select Tracking from the Map Toolbar, next Edit Keplerian elements and add beacon or receive

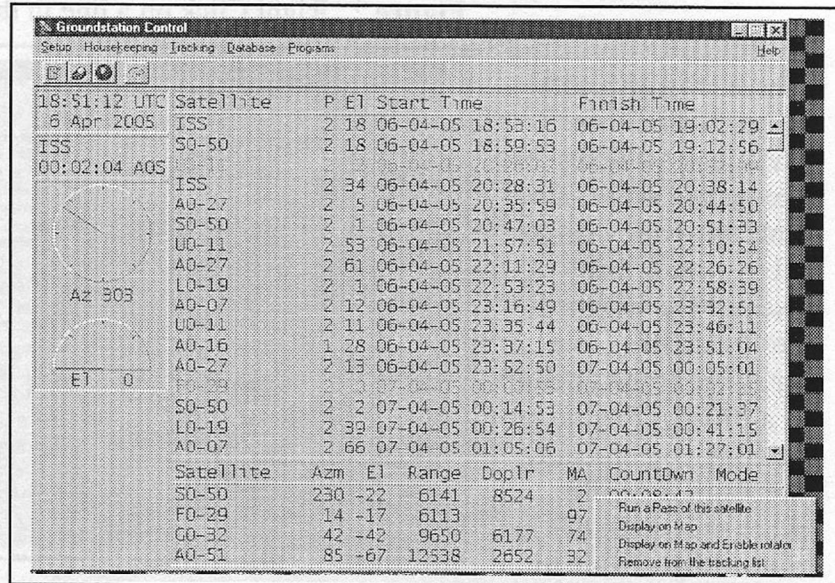
frequency in Beacon Frequency. It turns out that the Doppler shift is computed in the Graphic display and passed to the GSC Tracking Box.

I love this WiSP program and certainly appreciate Chris Jackson writing it and donating it to AMSAT. I am citing these problems and workarounds to help others deal with them and to make your experience better.

**Figure 3.** Right Click a line in the GSC Tracking Box

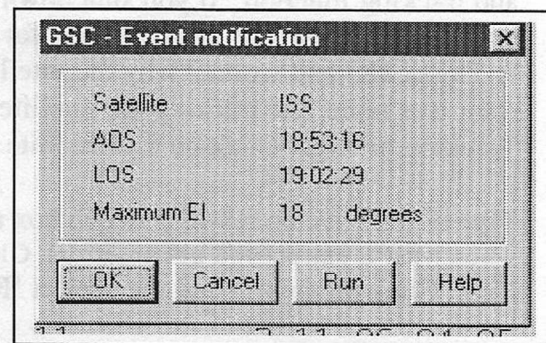
### RIGHT Click in the Tracking Box

Here you can do most of the functions associated with tracking a satellite. The line that you right click on causes that satellite to be selected to Run a pass, open up the Map display showing this satellite, Enable the rotor to track this satellite or remove this satellite from the Tracking box list.



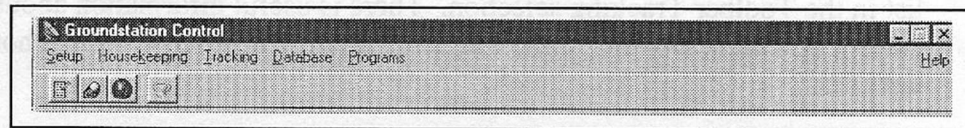
### Event Notification

When it is time for a scheduled satellite pass and Event Notification Box appears in the middle of the GSC screen. If you have the Sounds enabled you get a "Ding" or a voice message (more on this later) if you enable this. I find this invaluable, when tied to the Sound feature. I used to go and do something for the 15 minutes or so between passes and next thing I knew I missed the pass. The box itself is fine if you are staring at the screen, but if you are off at the workbench, you don't see it. This is configured in the Satellite Setup.



### Toolbars

There are two lines of



Toolbars in GSC. These contain a number of operational and setup items as well as some common program launch icons.

Note the HELP link in the upper right, it is very 'helpful', please use it!

As I said, **There is an excellent online HELP available for nearly every screen.** Most often the problems people encounter with WiSP are due to misunderstanding how the Pacsat Protocols works. Chris has done an good job of explaining the purpose or result



of different selections so that you can make an educated choice/guess. There is no substitute for studying the Pacsat Protocol or reading about the PB/PG programs.

### GSC program start icons

These icons start additional programs and functions useful to digital satellite operation. Of course these icons have information boxes, if you let your cursor linger on top of them. They are left to right:

**MessageMaker** (paper & pen)

**View Directory** (mailbox)

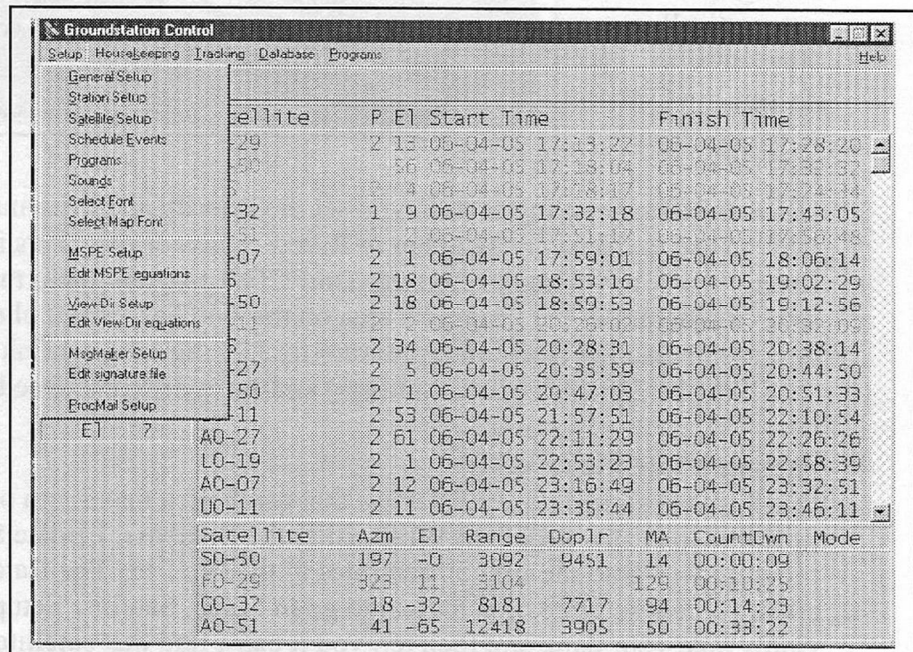
**Graphic Tracking** (globe)

**Enable Rotor** (checkmark rotate)



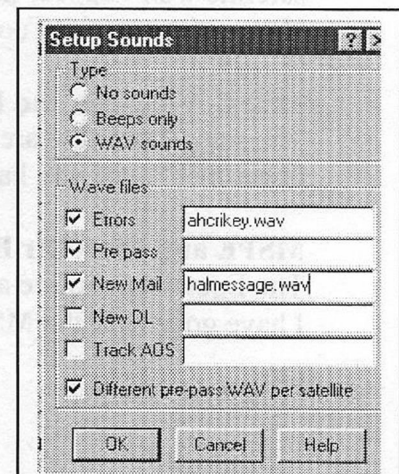
### GSC Setup toolbar

The setup toolbar contains a number of important setup items that you normally should've set up by now. These include the General Setup, Station Setup and Satellite Setup. You probably will use the Satellite Setup a number of times to edit or add satellites. The schedule of events and select fonts operations will not be discussed.



### Sounds

I find this very helpful feature. Here you can assign standard wav files for the GSC scheduled events or you can record wave files with specific pre-pass messages for each satellite. Just use the Windows Recorder program to do this. Plug a microphone with a mono, 1/8" phone plug into your sound card, activate the Windows Recorder program and simply record a short wave file saying something like 'bing AO-51 is rising'. The trick here is to name the wav file AO-51.wav, put it into the WiSP directory and check the Different pre-pass WAV per satellite box.

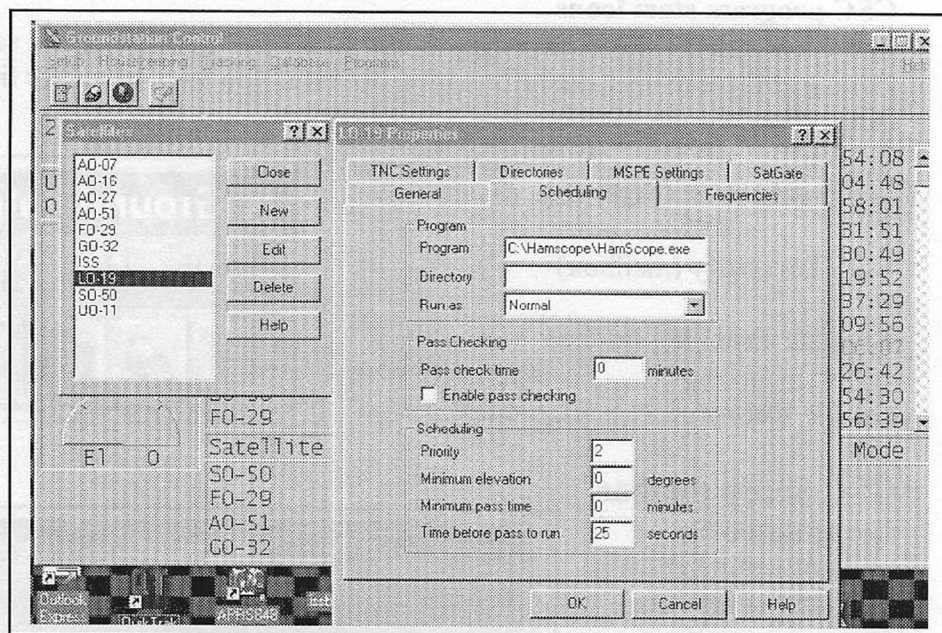


It is also very useful to add some type of attention sound to the beginning of the pre-pass message, else by the time your brain recognizes there is a message, it is over.

### Satellite Setup

If you want to automatically run a program other than MSPE when a satellite is in view, you set this up in Satellite Setup - Select satellite - Scheduling.

In the example to the right, I automatically run Hamscope to decode the CW telemetry from LO-19.



Down in the scheduling section you set the Priority and Minimum elevation you want GSC to use to determine whether to Run this pass or not. This is where you could specify that you wanted to Run the TImECHO program other than MSPE. You can also setup a program in the Programs area on the Toolbar, or just click on it from your desktop. I also run a terminal program for ISS digital downlink and for AO-16 switch to the DSP-12 1200 PSK (TNC Settings) and run a different speed terminal program.

### Adding a satellite to WiSP

WiSP was designed with a database that can hold a maximum of 50 satellites. The first time you load new keys into WiSP using the Database, Update Satellite Database, the program will grab the first 50 satellites in the key file. The Database is now full. When adding a new satellite, it is logical to go to Setup, Satellite Setup, New. The program will gladly take your data, and then tell you it can't find that satellite in the database. The satellite won't appear in the list and you can't use WiSP to work with the new satellite. No worries, see the Toolbar Database section on how to accomplish this.

### MSPE, View-Dir and ProcMail Setups

The setups for these are pretty straight forward. The defaults are good and you can experiment once you have read the MSPE and View-Dir sections.

### MSPE and View-Dir Equations

The Equations require a little more explanation though. I will address the equations once I have gone over the MSPE and View-Dir areas, when the terms will make more sense.



### MsgMaker Setup

This is the setup box for messages you will send via the PACSAT Protocol to the BB. Here you can specify which Dir you want to save your message source files.

Determine the number of bytes in a message before it will be compress and the compression type of choice.

If you want to have a standard signature file for your messages you specify the xxx.txt filename here.

If you want an automatic Greeting inserted into your message when you open it to edit, enter it here. Select the text editor of your choice, Notepad is always a good choice. The message expiry time you can select is open, but I understand that it actually will not use

anything more than 4 days. When the BBs were much busier, this was important because the RAM area turned over fairly quickly and it would help throughput to keep this number small. When WiSP and its' components were written (back in the early 90's) the compression programs of choice were PKZIP and LHArc. These are DOS programs and there is no provision to choose or to use WinZIP. Please install the PKZIP, PKUNZIP and LHArc programs in your WiSP directory. These are the only compression formats that WiSP will recognize and try to use. You can manually use WinZIP to unzip received files, if you track them down a few directory levels. DO NOT use WinZIP to zip files to send!

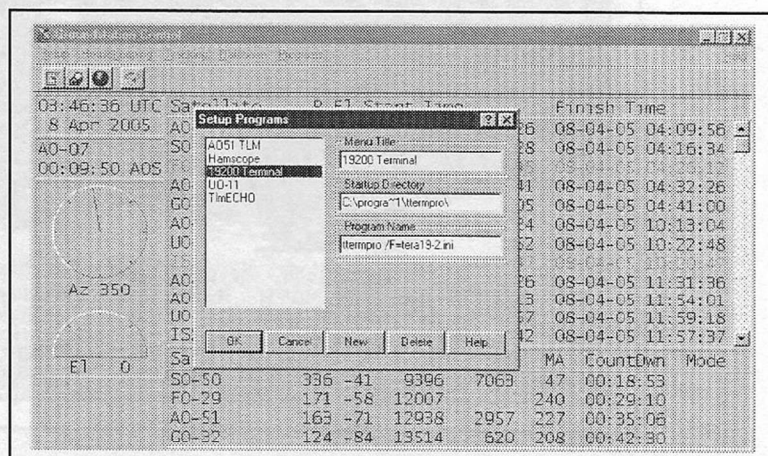


### GSC Setup Programs

This is a useful feature that allows you to setup programs that can be run from the GSC Toolbar selection Programs. So rather than move the windows around and try to find the icon on your desktop, you can run it from the Programs section on the Toolbar.

To setup a program, you simply enter a representative name, the filename you want to

run and the directory it runs from. It will now appear in the Programs Toolbar list. These programs are generally associated with satellite telemetry or other digital satellite modes rather than PACSAT Protocol. This function is different than running a program automatically for one satellite that you setup in GSC Satellite Setup – Program, here you have access to the programs at all times.



### GSC Left hand boxes

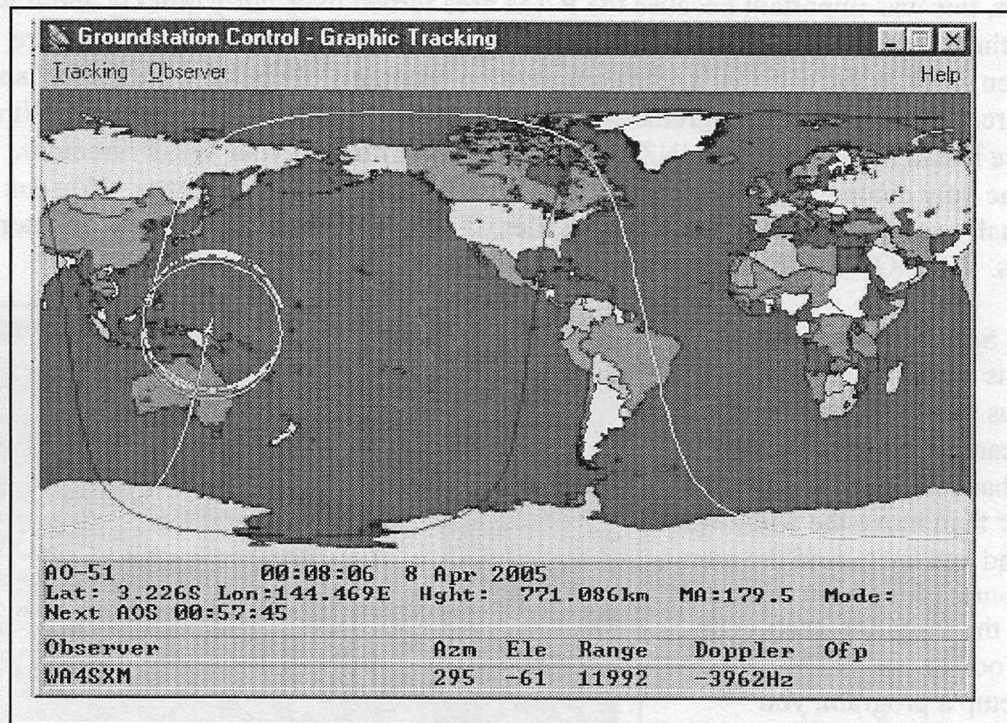
Down the left hand side of the GSC screen are three boxes. The top box is the current time and date. The second box is the currently Scheduled satellite. If you uncheck

Scheduling item in the Tracking entry of the Toolbar, this box will be blank. The bottom box shows the current rotor position for the current or last tracked satellite. WiSP can perform the rotor tracking function for a number of rotor controllers.

### Graphic Tracking

If you want a graphical representation of the current location of one satellite, click on the Globe icon or go to Tracking - Graphic Track. A new Graphical Tracking window will open. You can turn ON/OFF the display of the sun line, the ground track and, the footprint of the satellite. The four small dots in the SE United States is my QTH in Knoxville. You can change the displayed satellite by selecting Tracking - Satellite. The Graphic Tracking function can display up to 50 satellites, one at a time. When you import your first set of Keplerian elements, the first 50 satellites listed will be configured. No additional satellites can be added once the WiSP satellite database has 50 entries.

### WiSP Graphical Tracking



Under the **Tracking** selection you can:

- Select Satellite (any of the 50)
- Edit the Keplerian elements
- Enable Rotator (track the current sat)
- Fast Forward or Pause
- Setup Map Options
  - Ground Track
  - Footprint
  - Sun line/Terminator
  - Fast Forward speed
  - Map center (3 choices)



The residual footprint, as shown above is a known problem. It doesn't always show up, you can remove it by switching satellites, then return.

For a **Doppler** value to be present, the Beacon frequency must be added for each satellite under Tracking, Edit Keplerian elements.

**Observers** - You may also select and switch between different observers

### GSC Housekeeping Toolbar selection

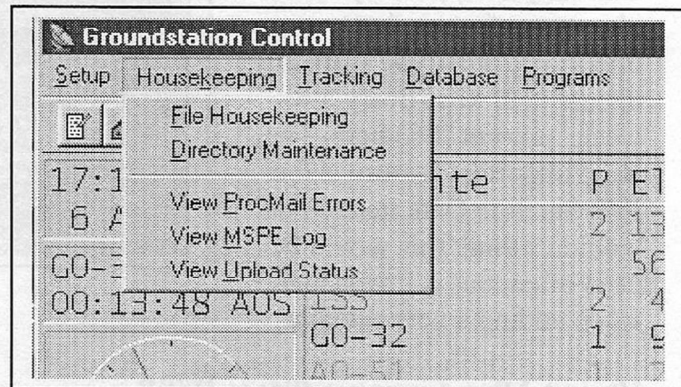
To assist you in doing file cleanup of your downloaded and uploaded files use the GSC **Housekeeping - File Housekeeping** selection. You can do this cleanup for one satellite or all the configured satellites at once. You decide the types of files and their age, this utility will then clean them up for you (delete them).

The **Directory Maintenance** selection of the GSC Housekeeping Toolbar will allow you to remove files with holes (incomplete file downloads).

### View ProcMail Errors

This selection will list any errors that have occurred while processing your mail. These errors generally are caused by not having the PKUNZIP and LHArc files to process downloaded files.

### GSC Housekeeping Toolbar Selections



### View MSPE Log

The screenshot shows the 'MSPE Logs' window. At the top, 'Satellite' is set to 'AO-51' and 'Average Efficiency' is 68%. Below is a table with columns: Date, Start, Finish, Total, BPS, and %eff. The table contains 13 rows of data from March 24 to April 7, 2005. At the bottom are buttons for 'OK', 'Clear', 'Print', 'Uploads', and 'Help'.

| Date        | Start    | Finish   | Total  | BPS | %eff |
|-------------|----------|----------|--------|-----|------|
| 24 Mar 2005 | 02:37:06 | 02:37:12 | 158    | 26  | 0    |
| 31 Mar 2005 | 01:26:39 | 01:28:51 | 78165  | 592 | 52   |
| 31 Mar 2005 | 03:01:25 | 03:09:25 | 127625 | 265 | 35   |
| 31 Mar 2005 | 15:11:37 | 15:19:25 | 48631  | 103 | 96   |
| 01 Apr 2005 | 02:23:09 | 02:30:06 | 268395 | 643 | 95   |
| 01 Apr 2005 | 14:36:02 | 14:39:21 | 7105   | 35  | 100  |
| 03 Apr 2005 | 14:53:27 | 15:00:51 | 32203  | 72  | 86   |
| 05 Apr 2005 | 15:12:36 | 15:20:28 | 82513  | 174 | 62   |
| 05 Apr 2005 | 16:51:58 | 16:58:14 | 34901  | 92  | 81   |
| 06 Apr 2005 | 02:22:47 | 02:32:46 | 102305 | 170 | 93   |
| 06 Apr 2005 | 14:33:19 | 14:40:37 | 6225   | 14  | 51   |
| 06 Apr 2005 | 16:13:42 | 16:15:59 | 3547   | 25  | 100  |
| 07 Apr 2005 | 01:46:47 | 01:49:06 | 37617  | 270 | 100  |

This selection is very useful in determining how well your system is receiving. You can see how many bytes you received each pass, what your BPS (bytes per second) average was, and your % efficiency – how many of the bytes broadcast did you receive. If the BB is not busy, as the second pass on 1 Apr, I got 100% of the bytes broadcast, but there were only 7k transmitted.

Be careful not to hit the clear key accidentally, all your data will be erased. The Print function does

not work. The Uploads button gives you good information on your upload efficiency.

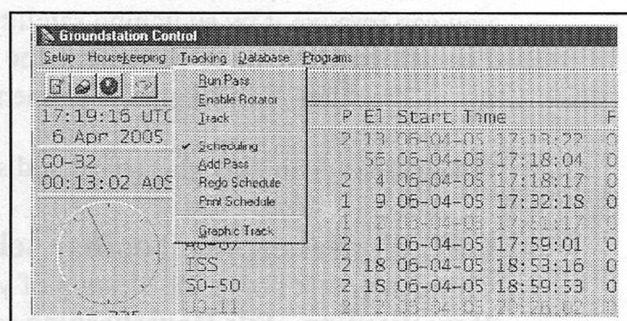
**View Upload Status** will list the files you have uploaded.

## GSC Tracking Toolbar

This part of the toolbar controls satellite operations for the pass. **Run Pass** does it all – it causes the rotor control (if available) to track the satellite, radio Doppler tracking (if available) and executes the Program assigned to this satellite.

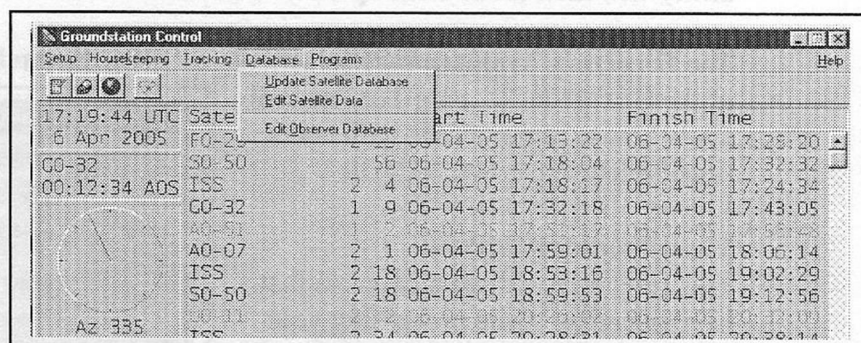
**Enable Rotator** will only cause the rotor to track.

**Scheduling** turns the second box on the left ON/OFF. If you add a new satellite, the **Redo Schedule** will refresh the window. **Graphic Track** activates the Map window.



## GSC Database Toolbar

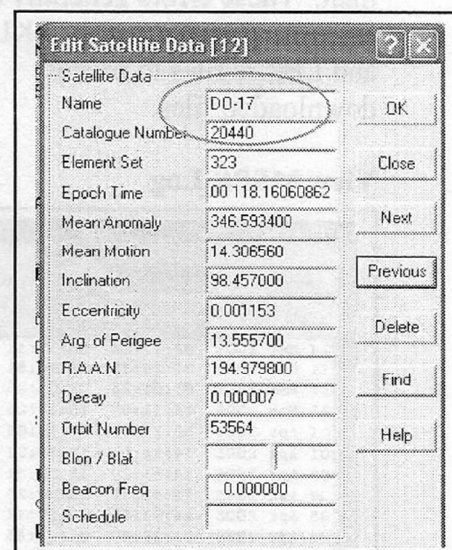
This may not be a very glamorous feature, but very important. First you manually update your keps every 3-4 weeks (except ISS) here. The most important feature is the Edit Satellite Data item. You wouldn't think this would be used often, but is invaluable when adding a new satellite



### Hint: Adding a new satellite to WiSP

The database gets filled with the first fifty satellites found in your kep file as soon as you 'Update Satellite Database'. The problem is that you can't seem to add a new satellite. Use the Database item on the GSC toolbar, select Edit Satellite data. Find an old satellite in the list to replace. You only need edit the **Name** and **Catalogue Number** (Chris' English influence) for the new satellite. Click OK and Close.

Now run the Update Satellite Database function again, and voila, your new satellite has been added.



### Catalogue Number, what is this?

This is actually what most tracking programs use to identify a satellite. Just as plants and animals have many common names, so do satellites. This is often confusing when trying to accurately identify something people call by different names. To identify the correct satellite the programs use the official Catalogue or Object number. This is found in the keps in data lines 1 & 2, item 1 – don't include the U.

```
AO-51
1 28375U 04025K 05118.74004018 .00000172 00000-0 64831-4 0 2365
2 28375 098.2154 183.2484 0084894 021.0261 339.4405 14.40451617 43492
```



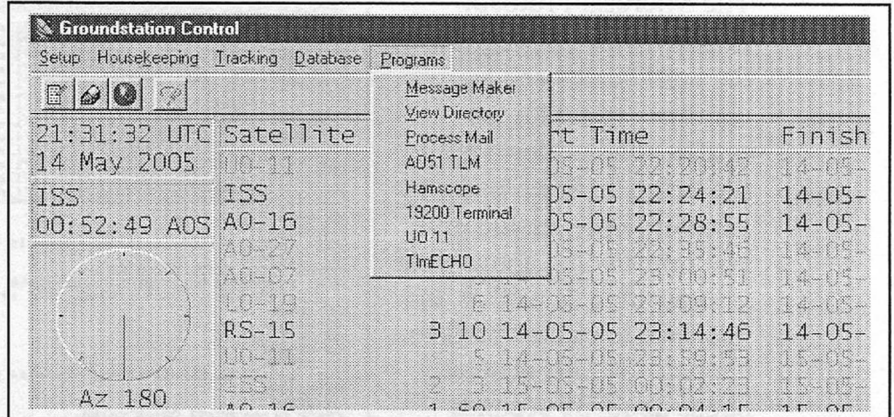
## GSC Programs Toolbar

This feature comes populated with the basic WiSP

component files, so you can easily startup another part of WiSP. Another user friendly part of this feature is that you can add programs that you use in conjunction with WiSP other than the standard programs like

MessageMaker. Here you can easily startup a telemetry decoding program or another

program like MixW or Hamscope. You enter the files and information under the GSC Setup item under Programs discussed earlier. Here in the toolbar item Programs, you select the program to execute



### Hint: Switching programs

- 1) If you are switching between programs that both need the serial port, be sure and close one of them.
- 2) If you start up MSPE automatically say for AO-51, and want to look at some telemetry, then close MSPE. Now when you close MSPE, WiSP will stop your auto tracking feature. To keep tracking the satellite, go to the toolbar Tracking selection, click Enable Rotor and select the satellite you want to keep tracking.

## GSC Help

There is a good help file to assist you with WiSP, be sure you take advantage of it. To check whether you have the latest collection of WiSP files, start GSC, go to the HELP item in the Tool bar and click on About. A popup screen will appear, listing the versions of the WiSP programs you are using. These haven't changed in many years, but make sure you have the current versions.

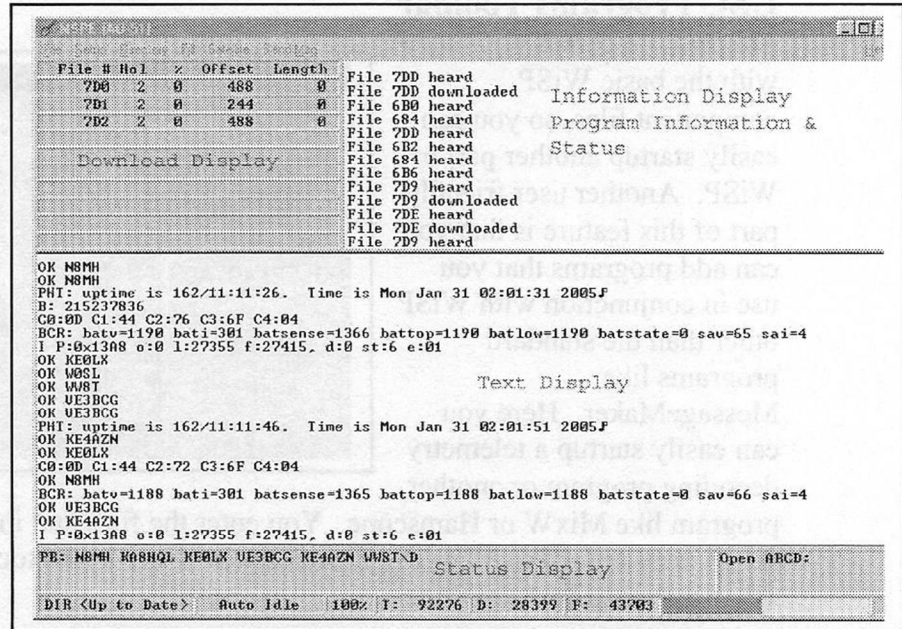
### Current WiSP Versions April 2005

WISP3215.exe is the compressed file with all of the current file updates.

|                 |  |
|-----------------|--|
| <b>GSC</b>      | <b>2.03</b>                                    |
| <b>MSPE</b>     | <b>2.01a (this is latest module to change)</b> |
| <b>VIEW-DIR</b> | <b>2.00e</b>                                   |
| <b>MSGMAKER</b> | <b>2.10a</b>                                   |
| <b>MSGVIEW</b>  | <b>2.00b</b>                                   |
| <b>PROCMail</b> | <b>2.00g</b>                                   |
| <b>UPDKEPS</b>  | <b>2.00c</b>                                   |
| <b>RR.INI</b>   | <b>0.73i (last added Yaesu FT-847 radio)</b>   |
| <b>RR.DLL</b>   | <b>1.14 04-18-97</b>                           |
| <b>WISP.HLP</b> | <b>12-26-96</b>                                |

## MSPE

The Microsat Protocol Engine (MSPE) program is the workhorse used to communicate with the satellite and perform the file uploads, downloads, directory updates and give you information about what is happening as well as an interface to cause things to happen. MSPE generally opens about 30 seconds before the satellite pass begins as a call from the GSC satellite setup Scheduling Program. If there is no satellite to communicate with there is no need to run the program. View Directory can be run anytime to operate on the files received.



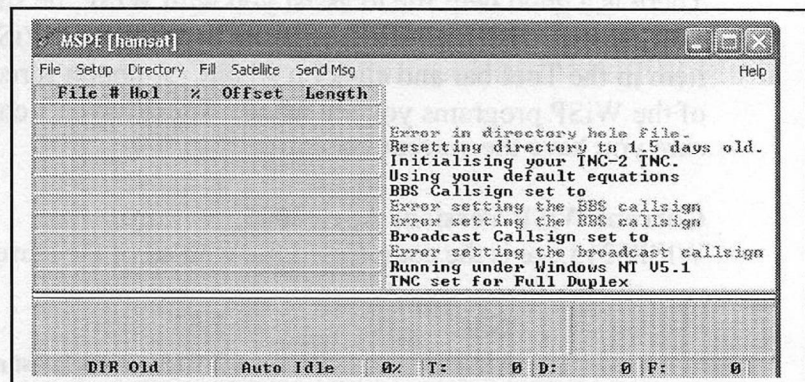
The MSPE screen is divided into 4 displays:

Download Display  
Information Display  
Text Display  
Status Display

### Information Display of MSPE

The first activity you see when MSPE opens is in the Information Display window. Initially you will see the status of serial communications between WiSP and the demodulating hardware/software. As you demodulate the signal data begins appearing in the Information Display and the Text Display window. Things to note in this window are:

Dir fill requests      files heard      file upload attempts      errors



The example Information Display shown above is not typical, but demonstrates a number of features. When you clean up or erase your hole files you will probably get the 'error in directory hole file' message. WiSP keeps track of all the files available in the directory and the status of each, if you mess with the files it detects a change and recovers. The

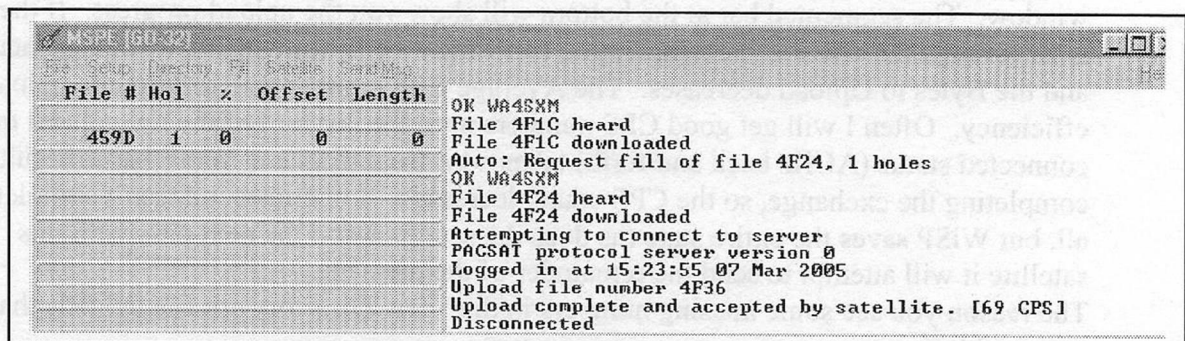
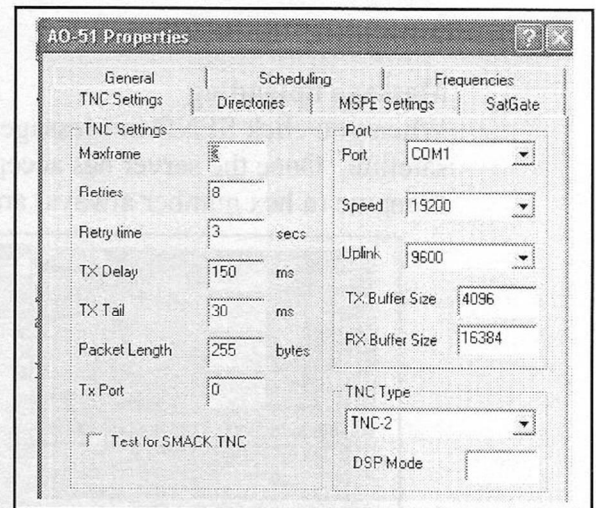


'Initializing your TNC-2' message tells you the status of the modem setup and special commands sent to the modem (like KISS ON, Full Duplex ON).

Hint: Modem, DSP, Software Demodulator setup file WiSP uses the modem/DSP settings selected per satellite in the TNC Setting area under Satellite Setup, *satellite*. If you have special modem setup needs you can put the commands into a text file called **MSPE TNC Startup.TXT**, then to return your modem to a specific state it will use a file you create named **MSPE TNC Exit.TXT**. Be sure to include the settings that would normally be sent by WiSP since your file will be sent in place of the standard WiSP modem settings.

Remember different serial ports and modems/DSPs can be used for each satellite.

**\*\* Do Not select the SMACK setting, it will cause errors when communicating with the satellite.**



Other MSPE Information Display messages tell you that your request to the satellite server was received, like the **OK WA4SXM** message above. I requested a hole fill in file 4F24, the hole file was transmitted and I received it. The next series of messages has to do with requesting to upload a file. This actually begins by creating an upload file with MessageMaker, selecting a satellite to upload and pressing SEND. Then when you are receiving this satellite WiSP will request a file upload. If the satellite server permits your request, your two systems will attempt to Connect (not a sure thing). Once connected the satellite server will return an acknowledgment and WiSP will begin the upload process.

**PACSAT protocol server version 0**  
**Logged in at 15:23:55 07 Mar 2005**  
**Upload file number 4F36**

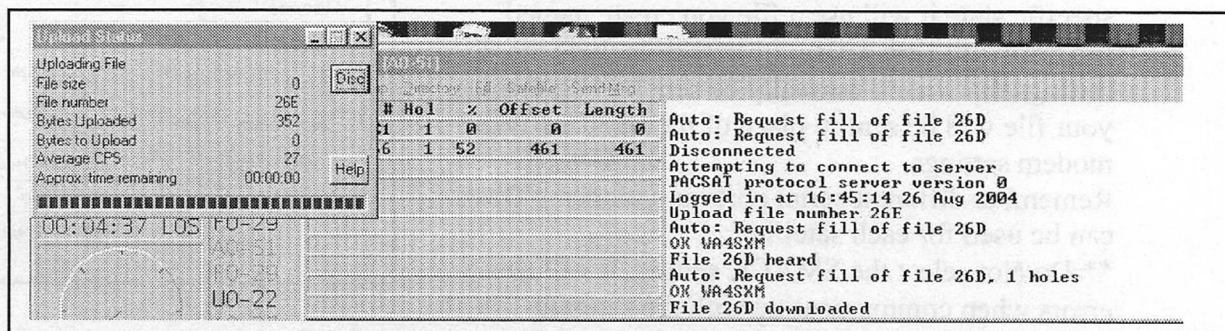
Once the file is uploaded (not always a sure thing), you will an upload complete message and the data rate, then the satellite server will disconnect you. Multiple people can be connected at the same time.

**Upload complete and accepted by satellite. [69 CPS]**  
**Disconnected**

Sometimes your line of site may not be optimal after requesting a file upload and you have trouble connecting. The RETRY counter will be exceeded and you will be disconnected. WiSP will automatically retry later.

### Message uploading

When you click SEND in MessageMaker WiSP queues the file for upload to a specific satellite. Once the server has accepted your request, it will assign the next consecutive filename (a hex number always) and inform WiSP which will open an Upload Status



window. The segmented bar at the bottom will show you the upload progress. If the file is larger than the one in the example, you can watch the Bytes Uploaded number increase and the Bytes to Upload decreases. The Average CPS number also reflects the upload efficiency. Often I will get good CPS numbers until the last part of the upload and my connected status (ACKs back and forth) takes a hit from trees and WiSP has difficulty completing the exchange, so the CPS count decreases. Sometimes it doesn't complete at all, but WiSP saves the entire state (as does the satellite) and the next pass with this satellite it will attempt to send the remainder of the message.

The reason you see some missing numbers in the View Directory are file uploads that did not complete.

### NO messages

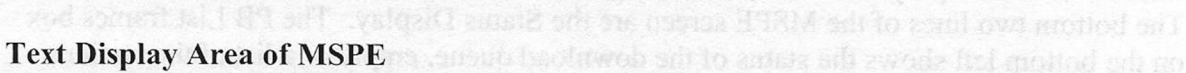
Occasionally you will see NO messages in the Information Display; these are the opposite of the OK message. Here are the most common ones and their cause:

- NO-1** frequency switching on upload
- NO-2** requested file no longer on the satellite
- NO-3** file on satellite, but marked not to download
- NO-5** invalid packet received (the SMACK problem)

The NO messages in the Information Display are only for you. If you don't clean up your files, your Directory View will show all the files it has received. If you request a file or have it automatically requested (in the Equations files), WiSP will request them. If you haven't been on the satellite in a while, WiSP will request files it was looking for the last time you were on and chances are you will get a NO-2 message.

**NO-2 fix:** You can correct this by removing the .ACT and .HOL files for the satellite directory for the file generating the error.



[illegible][illegible]

The B: messages usually are sent to give a running count of the number of bytes downloaded by the satellite.

WiSP compares these values with a count of the number of bytes it receives to compute the receive efficiency.

| File #   | Hol | % | Offset | Length |              |
|--|-----|---|--------|--------|--------------|
| 459D   | 1   | 0 | 0      | 0      |              |
| OK WA4SXM<br>File 4F1C heard<br>File 4F1C downloaded<br>Auto: Request fill of file 4F24, 1 holes<br>OK WA4SXM<br>File 4F24 heard<br>File 4F24 downloaded<br>Attempting to connect to server<br>PACSAT protocol server version 0<br>Logged in at 15:23:55 07 Mar 2005<br>Upload file number 4F36<br>Upload complete and accepted by satellite. [69 CPS]<br>Disconnected |     |   |        |        |              |
| :13008171<br>TC: Mon Mar 07 15:24:44 2005 : Gurwin Techsat1B <U9.86><br>BS is active again in trial version !!!<br>Users/8 Broadcasts , Uplink freq:145.890,145.850,145.930, 1269.800, 1269.900  |     |   |        |        |              |
| :13008467<br>:13008545<br>:13008623<br>:13008701<br>TC: Mon Mar 07 15:25:04 2005 : Gurwin Techsat1B <U9.86><br>BS is active again in trial version !!!<br>Users/8 Broadcasts , Uplink freq:145.890,145.850,145.930, 1269.800, 1269.900   |     |   |        |        |              |
| :13009023<br>:13009146<br>:13009198<br>:13009276<br>TC: Mon Mar 07 15:25:24 2005 : Gurwin Techsat1B <U9.86><br>BS is active again in trial version !!!<br>Users/8 Broadcasts , Uplink freq:145.890,145.850,145.930, 1269.800, 1269.900   |     |   |        |        |              |
| B: Empty.  |     |   |        |        | Open:AB1C23: |
| DIR <Up to Date>    Auto Idle    0%    T: 46423    D: 11589    F: 19731  |     |   |        |        |              |

### MSPE Status Display

The bottom two lines of the MSPE screen are the Status Display. The PB List frames box on the bottom left shows the status of the download queue, empty or a list of the stations in the queue, either for file downloads or directory updates ( these have a \D after the callsign).

|  |           |      |          |          |            |
|--|-----------|------|----------|----------|------------|
| PB: N8MH KA8HQL RE0LX UE3BCG KE4AZN WW8T\D |           |      |          |          | Open ABCD: |
| DIR <Up to Date>                           | Auto Idle | 100% | T: 92276 | D: 28399 | F: 43703   |

Across the bottom left to right,

- DIR** your directory status (current or the number of Dir holes)
- Auto** this box displays the downlink status (Idle, Dir, File #)
- xxx%** the current receiving efficiency %
- T:** total number of bytes received
- D:** total number of Directory bytes received
- F:** total number of bytes for broadcast files received

Bar graph showing how far into the pass you are and a U in the last small box at the end means an Upload is in progress.

|             |          |      |           |          |                                  |
|-------------|----------|------|-----------|----------|----------------------------------|
| PB: KB2M\D  |          |      |           |          | Open AB D: N0ZHE<br>N1JEZ WA4SXM |
| DIR 3 holes | Auto Dir | 100% | T: 130687 | D: 49621 | F: 16276                         |

The Open box shows which stations are connected to upload files and to which receiver.



### MSPE Download Display

This box shows the status of files that are currently being downloaded. The download can be because that file was requested or the file is marked as Grab. The five columns shown are Filename, # of holes left, % complete of download, Offset and Length (total file size in bytes). Once a file is

downloaded it disappears from this display. You can see that the files in the Download Display are consistent with those in the Information Display. Note that files 710, 704 were heard, but are not being downloaded.

| MSPE [A0-51] |       |           |        |           |                     |
|--------------|-------|-----------|--------|-----------|---------------------|
| File         | Setup | Directory | Fill   | Satellite | Send Msg            |
| File #       | Hol   | %         | Offset | Length    |                     |
| 6FD          | 12    | 78        | 30988  | 37474     | File 70A heard      |
| 6AF          | 10    | 85        | 31476  | 31658     | File 70A downloaded |
| 706          | 1     | 71        | 244    | 685       | File 710 heard      |
| 6F7          | 3     | 96        | 23912  | 24094     | File 6AF heard      |
| 6BF          | 2     | 0         | 37576  | 0         | File 704 heard      |
| 6A7          | 4     | 40        | 24400  | 58898     | File 6F7 heard      |
|              |       |           |        |           | File 6BF heard      |
|              |       |           |        |           | File 6F7 heard      |
|              |       |           |        |           | File 6A7 heard      |
|              |       |           |        |           | File 6F7 heard      |
|              |       |           |        |           | File 6A7 heard      |

### View Directory Display

This display has a great deal of information and I find it quite useful during and after a pass. First or all there is a file filter built-in that often evades the eye.

The columns are self explanatory except the S column. The letter by the filename in the S column tells you the current status of this file, the Message Status.

| View-Dir [A0-51] |   |        |        |              |          |                         |                     |  |  |
|------------------|---|--------|--------|--------------|----------|-------------------------|---------------------|--|--|
| FileNum          | S | To     | From   | Upload Time  | F Size   | % Title                 | Keywords            |  |  |
| 5B2              | N | ALL    | WA4SXM | 1640 12Jan05 | 1526     | 9600 hrs equipment poll |                     |  |  |
| 6B1              | g | UK5ZAI | UE3FRH | 1641 12Jan05 | 1403     | Re: visit               |                     |  |  |
| 6B0              | D | ALL    | F6HLG  | 1143 12Jan05 | 5655     | Bulletin du R.E.F       | lere sena News, inf |  |  |
| 6AE              | g | KE4AZN | DL1CR  | 1142 12Jan05 | 30822    | TlmEcho04               |                     |  |  |
| 6AD              | g | KE4AZN | DL1CR  | 1138 12Jan05 | 17228    | TlmEcho05               |                     |  |  |
| 6AC              | D | DJ8YQ  | DJ3OC  | 1001 12Jan05 | 670MSG   | es geht solala          |                     |  |  |
| 6AB              | g | DL9BU  | DJ3OC  | 1001 12Jan05 | 663      | RE:Gnme                 |                     |  |  |
| 6AA              | g | DK1TB  | DJ3OC  | 1001 12Jan05 | 603      | RE:Gnme                 |                     |  |  |
| 6A9              | g | DD1JSN | DJ3OC  | 1001 12Jan05 | 580      | Frage                   |                     |  |  |
| 6A8              | g | KE4AZN | DL1CR  | 0957 12Jan05 | 1027     | Re: Messages welcome    |                     |  |  |
| 6A6              | D | K04MA  | NSUXT  | 0434 12Jan05 | 342MSG   | Hey                     | <W>                 |  |  |
| 6A5              | D | ALL    | NSUXT  | 0430 12Jan05 | 3631MSG  | KEP ARL ARLK003         | <W>                 |  |  |
| 6A4              | D | K04MA  | KE4AZN | 0258 12Jan05 | 374MSG   | Re: woothoo             |                     |  |  |
| 6A3              | g | NSZNL  | NSUXT  | 0256 12Jan05 | 374      | Re: Hammond, La Hamfest | <W>                 |  |  |
| 6A1              | D | WA6FWF | K04MA  | 0254 12Jan05 | 335MSG   | woohoo                  | <W>                 |  |  |
| 6A0              | D | NSUXT  | NSZNL  | 0252 12Jan05 | 422MSG   | Re: Hammond, La Hamfest |                     |  |  |
| 69E              | N |        |        | 1616 12Jan05 | 384      | EL100112                |                     |  |  |
| 69D              | N |        |        | 1549 12Jan05 | 1200     | BL100112                |                     |  |  |
| 69C              | g | UE3FRH | UK5ZAI | 0022 12Jan05 | 878 55   | Re: visit               |                     |  |  |
| 69B              | N |        |        | 1603 12Jan05 | 6464     | AL100112                |                     |  |  |
| 69A              | D | I21ERR | IW1AM  | 2159 11Jan05 | 291MSG   | Ciao Piero!             |                     |  |  |
| 699              | D | W7DAS  | W7DAS  | 1721 11Jan05 | 288MSG   | Testing                 |                     |  |  |
| 698              | g | UK5ZAI | UE3FRH | 1718 11Jan05 | 649      | visit                   |                     |  |  |
| 697              | g | DJ3OC  | DJ8YQ  | 2158 11Jan05 | 67851 64 | Mat-Rodina              | 8000 Tonn           |  |  |
| 696              | D | DL8DR  | DD1JSN | 0856 11Jan05 | 1076MSG  | Re: Messages welcome    | <W>                 |  |  |
| 695              | g | DJ8YQ  | DL1CR  | 0857 11Jan05 | 464      | 1.6MB Doctor            |                     |  |  |
| 694              | N |        |        | 0230 12Jan05 | 460      | EL100111                |                     |  |  |
| 693              | D | K04MA  | NSZNL  | 0333 11Jan05 | 326MSG   | Hi                      |                     |  |  |
| 691              | g | UK5ZAI | W0SL   | 0329 11Jan05 | 576      | Re:                     |                     |  |  |
| 690              | N | W4RDI  | WA4SXM | 0153 11Jan05 | 391      | Welcome Back            |                     |  |  |
| 68F              | D | DD1JSN | KE4AZN | 0152 11Jan05 | 531MSG   | Re: Messages welcome    |                     |  |  |
| 68E              | D | UE3FRH | UK5ZAI | 0103 11Jan05 | 751MSG   | UK5ZAI15.TXT            |                     |  |  |
| 68D              | D | ALL    | UK5ZAI | 0103 11Jan05 | 569MSG   | Tsunami                 | Tsunami             |  |  |
| 68C              | N |        |        | 0049 12Jan05 | 1760     | BL100111                |                     |  |  |
| 68B              | g | KB9UPS | KB2M   | 0019 11Jan05 | 371      | where r u part 2        |                     |  |  |
| 68A              | N |        |        | 0021 12Jan05 | 9102     | AL100111                |                     |  |  |
| 689              | D | W0SL   | UK5ZAI | 2321 10Jan05 | 429MSG   | UK5ZAI11.TXT            |                     |  |  |
| 688              | D | DD1JSN | ON7NW  | 2057 10Jan05 | 853MSG   | Re: Messages welcome    |                     |  |  |
| 686              | D | UE3FRH | DD1JSN | 1915 10Jan05 | 736MSG   | Re: Enjoy               | <W>                 |  |  |
| 685              | D | DD1JSN | DL8DR  | 1741 10Jan05 | 766MSG   | Re: Messages welcome    |                     |  |  |

MSPE uses an equation file to determine how to process files when they are received in the directory broadcast. The initial settings are found in the MSPE Equations.TXT file and the View-Dir Equations.TXT file, discussed shortly. The Status can be changed by using the Toolbar Status buttons or by editing the equation files.

The message status values are :

|          |                                     |
|----------|-------------------------------------|
| <b>N</b> | Never                               |
| <b>P</b> | Priority                            |
| <b>A</b> | Auto (Auto, Auto 1, Auto 2, Auto 3) |
| <b>g</b> | Grab                                |
| <b>D</b> | Downloaded                          |

Messages with a **D** in column S have been completely download. You will get a message in the Information Display every time a message is completely downloaded and the Status will update (sometimes slowly) in the S column of View Directory. You can then use your mouse and click on the message line to select it, or double click on a message line to display the entire message, if it has been processed. When the messages are processed depend upon how you have setup the Mail Processing program, the default setting are good though.

If you see a message that sounds interesting, you can click on the file line and then click on one of the status buttons in the View Directory Toolbar. **P** is a good choice, since this will set that file up with Priority download status. You should shortly see a request to go to the server asking to download this file. The file status will also change to P. Once the file is downloaded the status changes to D, downloaded.

**G** or Grab means that if WiSP is receiving data from this file it will 'grab' it and start building a file, just in case you decide you want it later.

**N** means that you NEVER want WiSP to save any data it receives. Generally this is setup so you don't capture files meant for the command station, that have a specific format like ALxxxxxx, ELxxxxxx, BLxxxxxx.

|     |   |        |        |      |         |         |                         |
|-----|---|--------|--------|------|---------|---------|-------------------------|
| 5AE | g | KE4AZN | DL1CR  | 1142 | 12Jan05 | 30822   | TlmEcho04               |
| 5AD | D | KE4AZN | DL1CR  | 1138 | 12Jan05 | 17228   | TlmEcho05               |
| 5AC | D | DJ8YQ  | DJ3OC  | 1001 | 12Jan05 | 670MSG  | es geht solala          |
| 5AB | g | DL9BU  | DJ3OC  | 1001 | 12Jan05 | 663     | RE:Gr <sup>m</sup> e    |
| 5AA | g | DK1TB  | DJ3OC  | 1001 | 12Jan05 | 603     | RE:Gr <sup>m</sup> e    |
| 5A9 | g | DD1JSN | DJ3OC  | 1001 | 12Jan05 | 580     | Frage                   |
| 5A8 | g | KE4AZN | DL1CR  | 0957 | 12Jan05 | 1027    | Re: Messages welcome    |
| 5A6 | D | KO4MA  | N5UXT  | 0434 | 12Jan05 | 342MSG  | Hey                     |
| 5A5 | D | ALL    | N5UXT  | 0430 | 12Jan05 | 3631MSG | KEP ARL ARLK003         |
| 5A4 | D | KO4MA  | KE4AZN | 0258 | 12Jan05 | 374MSG  | Re: woohoo              |
| 5A3 | g | N5ZNL  | N5UXT  | 0256 | 12Jan05 | 374     | Re: Hammond, La Hamfest |
| 5A1 | D | WA6FWF | KO4MA  | 0254 | 12Jan05 | 335MSG  | woohoo                  |
| 5A0 | D | N5UXT  | N5ZNL  | 0252 | 12Jan05 | 422MSG  | Re: Hammond, La Hamfest |
| 59E | N |        |        | 1616 | 12Jan05 | 384     | EL100112                |
| 59D | N |        |        | 1549 | 12Jan05 | 1200    | BL100112                |
| 59C | g | VE3FRH | UK5ZAI | 0022 | 12Jan05 | 878 55  | Re: visit               |

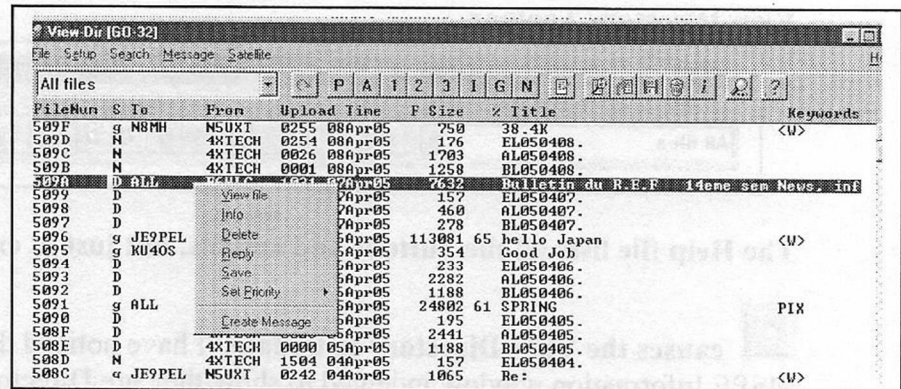
**% column** - if it has a 2 digit numeric value in it, this tells you how much of this selected file has been download. If the file has been downloaded and is a message file, the MSG symbol appears.



## Message Actions

Chris built in a great feature that I fear is seldom used. If you right click on a message line you get an Action box that pops up. Here you can do anything you would want to do with this message.

**View the file**  
**Information**  
**Delete**  
**Reply**  
**Save**  
**Set Priority**



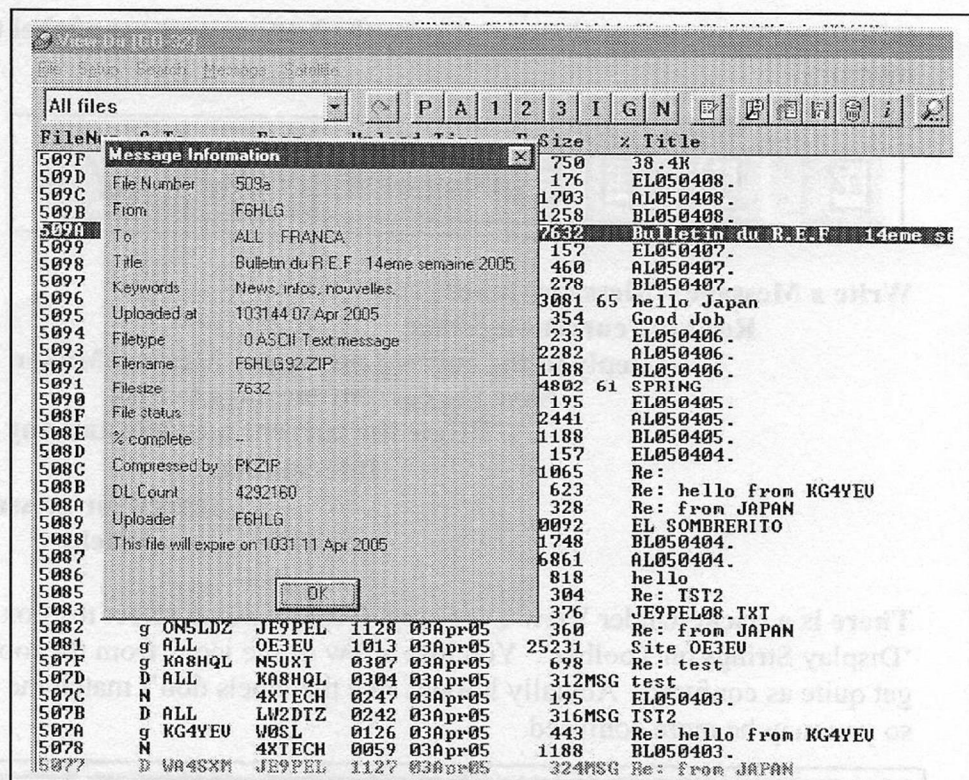
## Message Reply

If you want to reply to a message, whether it is addressed to you or not, click on the message line to highlight it. Then click on the reply icon in the toolbar or click on the line and select reply. This opens up MessageMaker for you to create a reply.

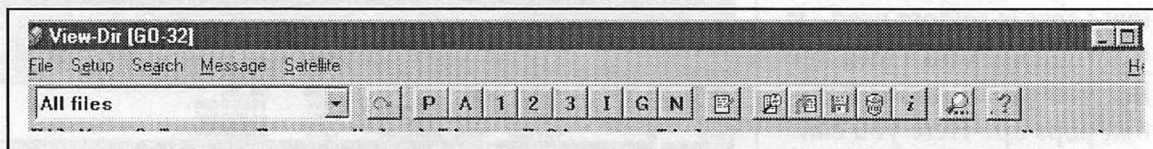
## Message Information

Right click on a message line, select Info and up pops an information box about this file.

An alternative method to getting the file information is to select the file, then click on the **I** button in toolbar.



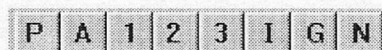
## View Directory Toolbar



The Help file lists all the buttons and actions, but just in case you didn't read it –

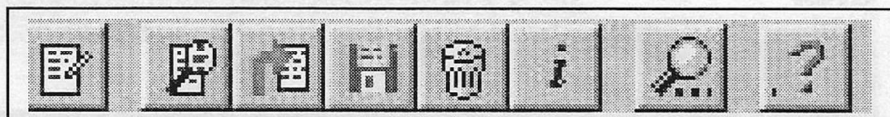


**causes the View Directory to update.** I have noticed that I have seen files in the MSPE Information window indented to show they are Directory updates, click on the Update button and they still don't appear. I have found that going up to the MSPE window and clicking on the Directory item, will do a better refresh.



These are the message status buttons to change the download status of a message or for the **I** button to get information about the message. Priority, Auto, Auto 1, Auto 2, Auto 3, Information, Grab, Never.

Of course, you can rest the cursor over the buttons and get a label to refresh your memory.



**Write a Message – MessageMaker**

**Read the current message**

**Reply to the current message – MessageMaker**

**Save the current message to disk**

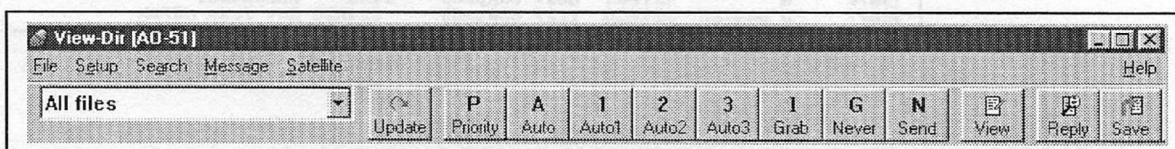
**Delete the current message and any ACT or HOL files**

**Information**

**Search for messages**

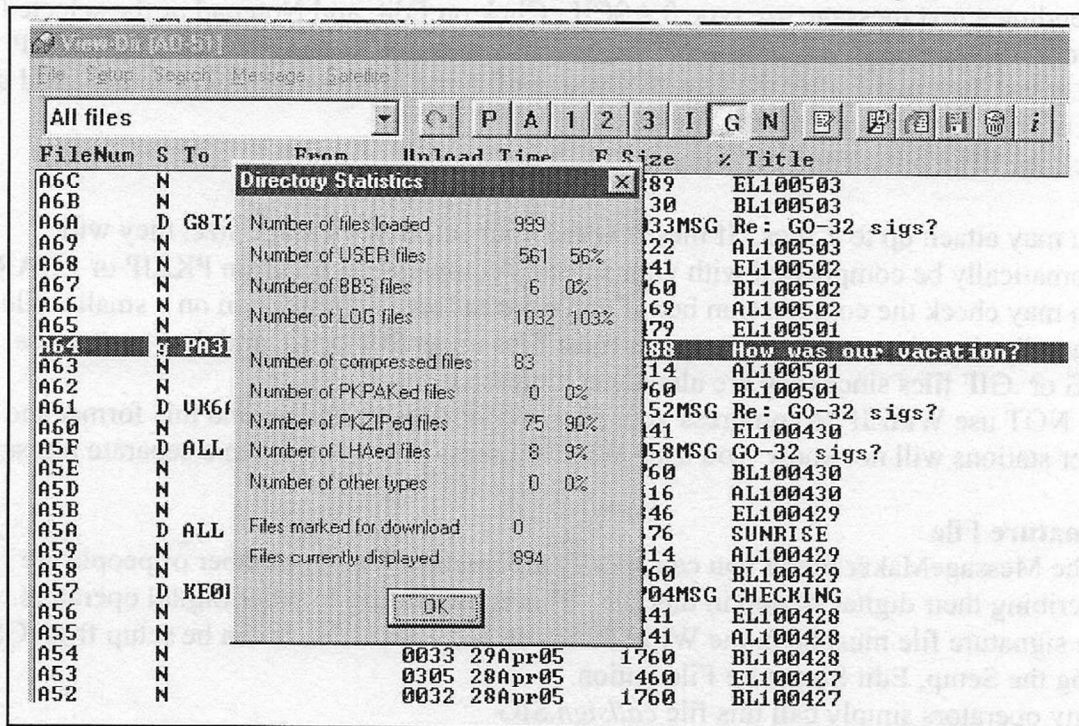
**Help**

**There is a trick.** Under View-Dir Setup, General Setup select the box 'Display Strings on Toolbar'. You lose a few of the icons from the toolbar, but you don't get quite as confused. Actually it looks like the labels don't match the buttons past Auto3, so you may be more confused.



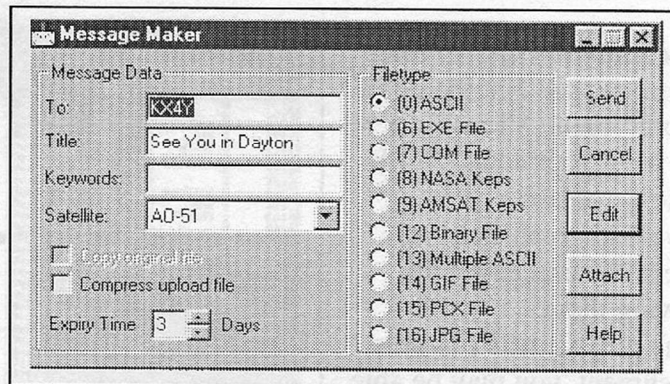


There is another useful feature in the View-Dir text toolbar under **Message, Statistics**.



## MessageMaker

This is the program used to generate a message. Generating a message is a little more complicated than you expect, but this utility makes it easy. MessageMaker does a number of operations: it assigns a PFH (PACSAT File Header), includes a file type; runs an editor like Notepad to create your message; combines any attached files; packages them for upload, compresses the files if necessary and notifies MSPE that there is a file to upload.



Whether you generate a new message or respond to one you received or saw in View Directory, MessageMaker is what you use. Enter the callsign of a person (could be your callsign if testing) or ALL in the To: field. Enter a Title: , Enter Keywords if you wish and select the satellite. If you are running a particular satellite this will already be selected, but can be changed. Set the expiration date, I am told that everything expires after 4 days maximum.

Select the type of message in the radio button list. Although there are many more defined filetypes (See Appendix or WiSP Help), these are the most common. Generally 0 – the ASCII file and 16 – the JPG file are the most commonly selected.

If sending a text message use type 0 ASCII. Click on Edit, and Notepad or the selected editor will pop up. If you have received or sent a message to this person before, WiSP will insert their name after the Greeting you configured in MessageMaker setup. Add the rest of the message and exit the file editor.

Click the Send button and off it goes.

You may attach up to 2 files. If these exceed your selected message size, they will automatically be compressed with your selected compression program PKZIP or LHARC. You may check the compression box if you want to force compression on a smaller file. Generally there is no need to compress most files under 20k or so, and don't compress .JPG or .GIF files since they are already compressed.

DO NOT use WinZIP to compress your files, WiSP doesn't understand this format and other stations will not know you used WinZIP unless you tell them in a separate message.

### Signature File

In the MessageMaker Setup you can specify a Signature file. A number of people are describing their digital station in this file. This is interesting to other digital operators. The signature file must be in the WiSP directory and a text file. It can be setup from GSC using the Setup, Edit Signature File option.

Many operators simply call this file *callsign.SIG*

### Sending a .JPG or .GIF file

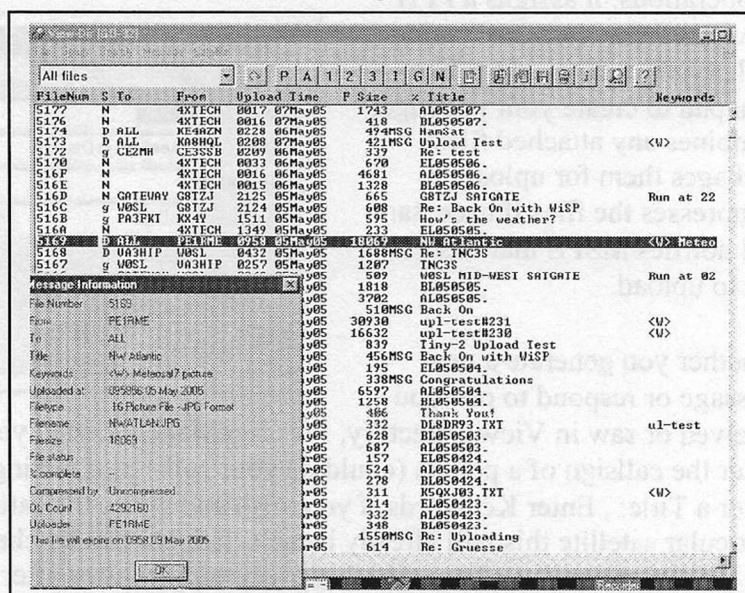
These are actually attached files. Click on Attach, enter the filename and path.

You can choose to add a text message or not. After attaching the graphic file, just select Edit and enter your message. When you click Send, MessageMaker will combine them.

### Processing Graphics Files

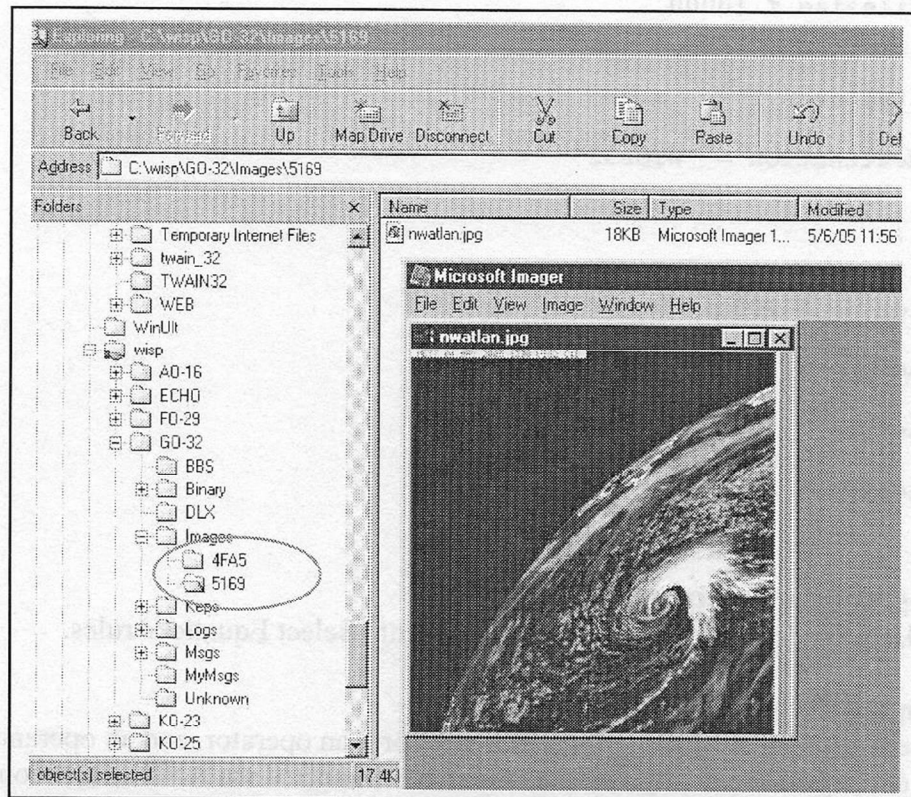
When you see that there is a graphic file in ViewDir or you have your equation file set to automatically download graphics files, here is the procedure for viewing them.

If the graphic was a simple attachment, you may be able to double click on the message line and the graphic will be displayed in your default viewer.





You may have to wait until after the pass and ProcMail has processed the image. You may have to use Explore (not IE, right click on Start, chose Explore) to go to this directory entry and then click on the entry to view it. Below is the file 5169 referenced in the previous graphic. Notice that it is stored in the satellite directory, Images subdirectory, message # subdirectory.



## MSPE Equations

You can have a different equation file for each satellite. It should be located in the satellite directory. You can also have a default set of equations and this must be located in the WiSP Directory. If MSPE doesn't find an equation file in the satellite directory, it will use the file in the WiSP Directory.

**Hint:** Filename for equation file in Help is incorrect, should be **MSPE Equations.txt**

There is also a **View-Dir Equations.txt**, but you probably will not need to change this one.

The MSPE Equations.TXT file determines what files are automatically saved and processed. The file status is set using these rules in the default file:

**Auto:** files addressed to ALL and are less than 10k  
**Priority:** files addressed to WISP32  
**Never:** files with filetype >200 OR filetype 1 OR 2 OR 18

**Default MSPE Equations.TXT**

```

[auto]
{
    destination = "ALL"
    &
    filesize < 10000
}

[priority]
{
    destination = "WISP32"
}

[never]
{
    filetype > 200
    |
    filetype = 1
    |
    filetype = 2
    |
    filetype = 18
}

```

**Writing your own equations**

See the Help file for a complete list of MSPE Auto Select Equations rules.

**Basic Equation rules**

- 1) Each equation must be made up with a keyword, an operator, and an operand.
- 2) Only one equation per keyword, these can be connected via AND or OR connectors.
- 3) EQUATION NAME is one of the six Status names specified above.
- 4) [EQUATION NAME] is specified in brackets
- 5) The equation itself is specified between braces { EQUATION }
- 6) There must be a space separating each function

Let's say we want to change the equations to:

- 1) Get all emails from Roy, W0SL since he usually is answering a WiSP question, and put these at a Priority status.
- 2) Get any file that is a .JPG or .GIF, and put these at an AUTO 1 status
- 3) Get any files that are from 4XTECH and have 'ST' in the filename (the telemetry file) and put these at an AUTO status
- 4) Put files addressed to ALL and the file size is < 20k bytes, put at an AUTO 2 status.
- 5) Get any files with "DSP" in the title, and put these in AUTO status



The equation for #1 would be [PRIORITY] { (source = "W0SL") }  
 The equation for #2 would be [AUTO 1] { filetype = 16 | 14}  
 The equation for #3 would be [AUTO] { source = "4XTECH" & title = "ST" }  
 The equation for #4 would be [AUTO 2] { destination = "ALL" & filesize < 20000}  
 The equation for #5 would be [AUTO] {title = "DSP"}

Although the equation processor will take the file with the information in a more compressed format, it is good programming practice to format the information to make it very clear what is specified.

**The new MSPE Equations.TXT file would look like this:**

```
[PRIORITY]
{
    (source = "W0SL")
}

[AUTO]
{
    (source = "4XTECH" & title = "ST")
    |
    (title = "DSP")
}

[AUTO 1]
{
    (filetype = 16 | 14 )
}

[AUTO 2]
{
    destination = "ALL" & filesize < 20000
}

[never]
{
    filetype > 200
    |
    filetype = 1
    |
    filetype = 2
    |
    filetype = 18
}
```